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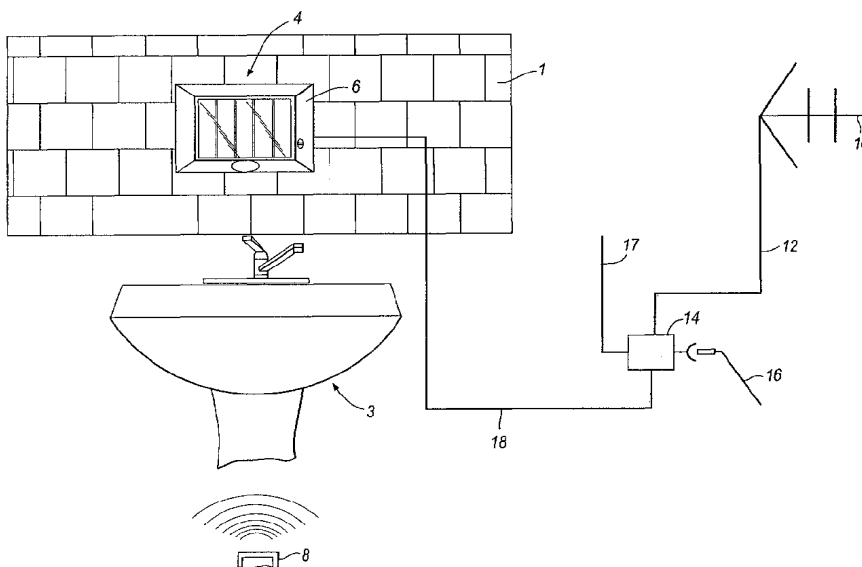
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(54) Title: IMPROVEMENTS IN CONNECTIONS FOR AUDIO/VISUAL DISPLAY MONITORS



(57) Abstract: A system for conducting data streams and power to a remote monitor (4) having a screen includes one coaxial (18) carrying both the data stream(s) and the power to the remote monitor (4).



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IMPROVEMENTS IN CONNECTIONS FOR AUDIO/VISUAL DISPLAY MONITORS

5 [0001] This invention concerns improvements in connections for
audio/visual display monitors.

10 [0002] Our co-pending UK Patent Application No 0121005.3 discloses
inter alia a connector for connecting a decoder to an audio/visual
remote monitor having a screen, the connector comprising a cable
conforming to CAT5 protocol and a junction box at one end
portion thereof for connecting an electrical input, an audio/video
input and an infrared input whereby control of the decoder can be
effected by a remote controller directing infrared signals to a
receptor of the monitor.

15 [0003] The invention the subject of that Application is primarily
concerned with the provision of a connector suitable for a
waterproof television unit adapted for deployment in a room such
as a bathroom where there is exposure to moisture that could
20 adversely affect the operation of the unit.

[0004] An object of the present invention is to provide an improved
system for conducting data stream(s) and power to a remote
monitor having a screen.

25 [0005] A further object is to provide a waterproof television unit and a
waterproof remote controller.

30 [0006] According to the invention a system for conducting data
stream(s) and power to a remote monitor having a screen is

characterised by a single cable adapted to carry both data stream(s) and power to the remote monitor.

5 [0007] The single cable may be a coaxial cable or a 4 twisted pair cable, *e.g.* a CAT5 cable or any of its predecessors (CAT 3 and CAT 4) or its successors (CAT5E and CAT6).

10 [0008] In practice low voltage is coupled with the data stream, *e.g.* the RF and sent through the cable to power a television unit and associated electronics thereby obviating the need for additional cabling and high voltage.

15 [0009] The invention includes a power combiner unit for the transmission of power and RF to the television unit which may conveniently be waterproof to the extend that it can be deployed in a bathroom or other environment in which water or water vapour may be encountered. A waterproof housing may be provided for the fixing of the television unit within or on the wall of such an environment.

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[00010] A waterproof control may also be provided and *in situ* may be mountable within or on a wall, for example a bathroom wall opposite the television unit and in easy reach of the occupant.

25 [00011] In one example of the invention a remote control arrangement involves the extension by the use of 4 twisted pair cable of the internal controller board, which controls the functions of power on/off, channel control, volume control, channel tuning and remote control IR reception.

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[00012] The television unit conveniently uses thin film technology (TFT) and incorporates speakers and an RF tuner which may be controllable by a waterproof membrane switch on the front of the unit. The complete unit is conveniently waterproofed as a whole rather than as individual elements. Reverse infrared may also be available to control other audio/visual equipment should this be required.

[00013] The monitor screen of the television unit may conveniently be provided with a heating circuit to counter condensation difficulties and an automatic override timer may also be provided. The heating circuit is preferably arranged as an internal heater which is adapted to elevate the internal temperature of the entire enclosure as well as the front panel thereby preventing internal and external condensation.

[00014] By way of example only, one embodiment of a system according to the invention for conducting data streams and power to a remote monitor including a screen is described below with reference to the accompanying drawing which is a diagrammatic representation.

[00015] Referring to the drawing there is shown a wall 1 of a bathroom having the usual equipment, a basin on a pedestal being shown by way of example at 3, in which a television unit 4 having a thin film technology (TFT) audio/visual monitor is disposed within a water proof enclosure 6 set into the wall 1. The television unit 4 is also provided with an internal heater (not shown) which when activated serves to prevent condensation both internally and externally. A remote controller 8 is mounted in or

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on the opposite wall (not shown) from where the occupant is likely to be positioned for viewing.

5 [00016] An antenna 10 for receiving signals is located suitably in or
on the residence in which the system of the invention is installed
and is provided with a cable 12 leading to a power combiner unit
14 to which power is fed at low voltage by a conductor 16 and to
which infrared control 17 is passed. A coaxial cable 18 then
10 connects the power combiner unit 14 to the television unit 4 and
thus carries both power and data streams (including RF signals) in
the way of signals for the unit 4. The coaxial cable 18 also
carries the return infrared signal from the unit 4.

15 [00017] Although the specific example describes a coaxial cable it is
to be understood that the invention embraces other single cables
capable of providing the functions as described. In particular, a
CAT5 protocol cable could be employed.

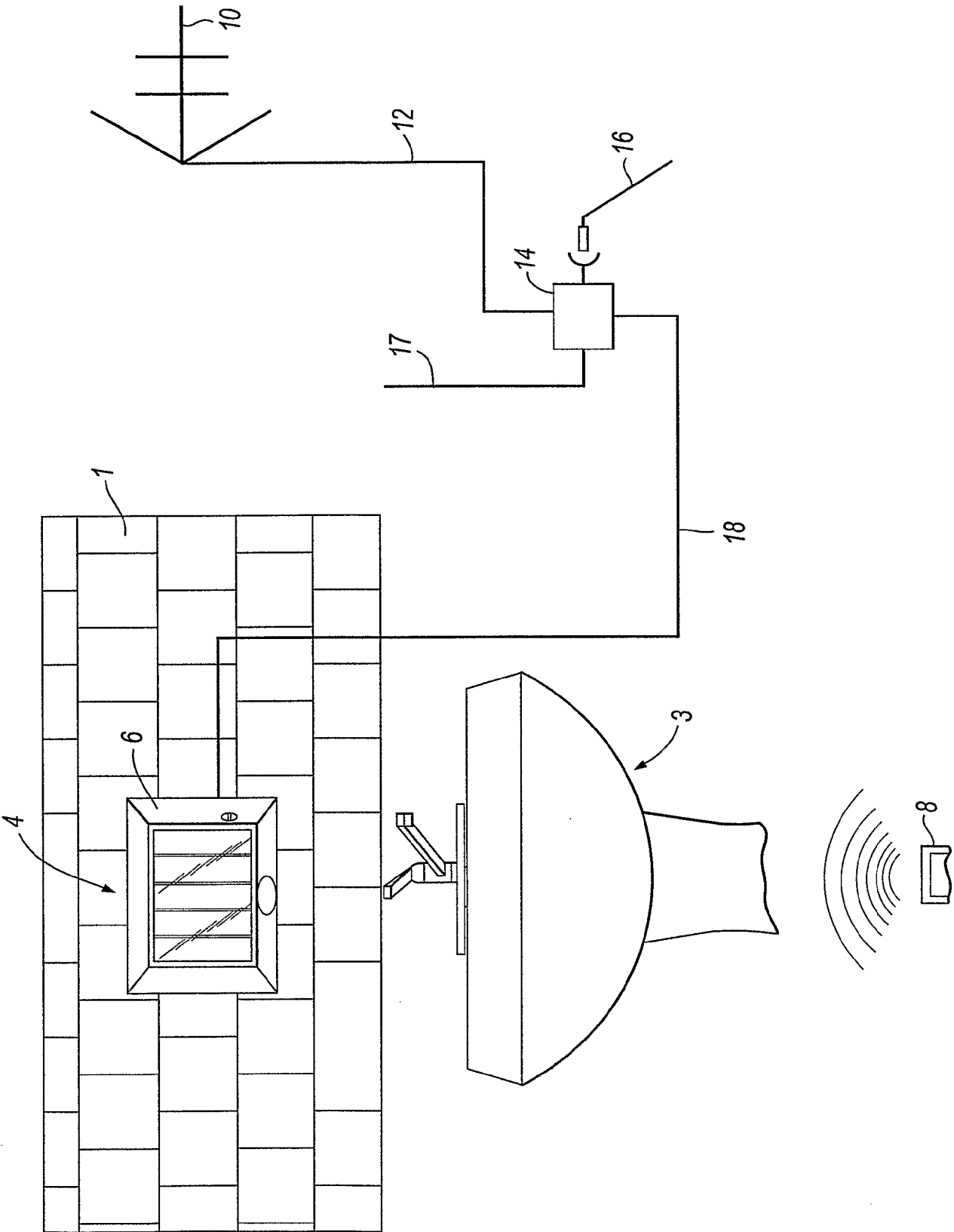
20 [00018] The invention thus obviates the need for a proliferation of
cables since all the data signals and the power are carried in but
one coaxial cable.

CLAIMS

- 5 1. A system for conducting data stream(s) and power to a remote monitor (4) having a screen is **characterised by a**
single cable (18) adapted to carry both data stream(s) and power to the remote monitor (4).
- 10 2. A system according to Claim 1 **characterised in that** the single cable is a coaxial cable or a 4 twisted pair cable.
- 15 3. A system according to Claim 1 or 2 **characterised in that** low voltage is coupled with the data stream and sent through the coaxial cable (18) to power a television unit (4).
- 20 4. A system according to any one of the preceding claims **characterised by a power combiner unit (14)** for the transmission of power and the data stream(s) to the remote monitor (4).
- 25 5. A system according to any one of the preceding claims **characterised in that** the remote monitor (4) is waterproofed.
6. A system according to Claim 4 **characterised in that** the remote monitor (4) is provided with a waterproof housing.
- 30 7. A system according to any one of the preceding claims **characterised in that** the remote monitor (4) is provided with a heater unit.

8. A system according to any one of the preceding claims
characterised in that waterproof control is provided.
- 5 9. A system according to any one of the preceding claims
characterised in that the remote monitor (4) incorporates a
television unit and an RF tuner with speakers.
- 10 10. A system according to Claim 9 **characterised in that** the
remote monitor (4) incorporating the television unit, the RF
unit and speakers is waterproofed as a whole in one
assembly.
- 15 11. A system according to any one of the preceding claims
characterised in that the data stream(s) include RF signals.
- 20 12. A system according to any one of the preceding Claim 4
and any claim dependent thereon **characterised in that** an
antenna (10) is provided and is connected *via* a cable 12 to
the power combiner unit (14) to which in use power is fed at
low voltage by a conductor (16) and to which infrared
control (17) is passed.
- 25 13. A system according to Claim 12 **characterised in that** the
single cable (18) connects the power combiner unit (14) to
the remote monitor (4).
14. A system according to Claim 11 **characterised in that** the
single cable (18) in use also carries the return infrared
signal from the remote monitor (4).

15. A system according to any one of the preceding claims characterised in that a remote control arrangement involves the extension by the use of 4 twisted pair cable of the internal controller board, which controls the functions of power on/off, channel control, volume control, channel tuning and remote control IR reception.
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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| Y | PATENT ABSTRACTS OF JAPAN & JP 11 341400 A (MUSASHI DENSEN KOGYO KK), 10 December 1999 (1999-12-10) abstract | 1-14 |
| Y | EP 1 134 909 A (BIWAVE TECHNOLOGIES) 19 September 2001 (2001-09-19) column 1, line 35 -column 3, line 24 column 4, line 8 -column 9, line 26 | 1-6, 8-14 |
| Y | JP 02 285160 A (MATSUSHITA ELECTRIC IND CO LTD) 22 November 1990 (1990-11-22) abstract | 7 |
| | --- -/-- | |

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☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | US 2002/001337 A1 (CHAUNCEY D. ET AL) 3 January 2002 (2002-01-03) page 1, paragraph 13 - paragraph 17 page 2, paragraph 22 - paragraph 27 page 5, paragraph 79 - paragraph 89 page 6, paragraph 106 ---- | 1-6, 8-14 |
| A | US 6 057 765 A (JONES T. ET AL) 2 May 2000 (2000-05-02) column 2, line 56 -column 3, line 24 column 12, line 63 -column 13, line 17 ---- | 1,2 |
| A | GB 2 359 429 A (ITT MANUFACTURING ENTERPRISES INC.) 22 August 2001 (2001-08-22) page 4, line 21 -page 9, line 18 ----- | 1,2 |

INTERNATIONAL SEARCH REPORT

PCT/GB 03/01259

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|----|---------------------|---|--|
| JP 11341400 | A | 10-12-1999 | NONE | |
| EP 1134909 | A | 19-09-2001 | EP 1134909 A1 | 19-09-2001 |
| JP 02285160 | A | 22-11-1990 | JP 2850367 B2 | 27-01-1999 |
| US 2002001337 | A1 | 03-01-2002 | US 6463089 B1 US 6466607 B1 | 08-10-2002 15-10-2002 |
| US 6057765 | A | 02-05-2000 | GB 2344423 A , B | 07-06-2000 |
| GB 2359429 | A | 22-08-2001 | AU 1016702 A CA 2368628 A1 CN 1367609 A EP 1227673 A2 JP 2002247458 A US 2002100051 A1 | 25-07-2002 19-07-2002 04-09-2002 31-07-2002 30-08-2002 25-07-2002 |